



1/8

SEQUENCE LISTING

<110> Lorenz, Michael C.  
Fink, Gerald R.

<120> Glyoxylate Cycle Enzymes as Targets for  
Antifungal Drug Development

<130> 0399.2026-001

<140> 10/071,894

<141> 2002-02-08

<150> 60/267,622

<151> 2001-02-09

<160> 6

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 550

<212> PRT

<213> C. albicans ICL1

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35 40 45  
Thr Leu Lys Ile Asn His Pro Ser Ser Gln Gln Ala Asp Lys Leu Phe  
50 55 60  
Lys Leu Leu Glu Thr His Asp Ala Asp Lys Thr Val Ser Phe Thr Phe  
65 70 75 80  
Gly Ala Leu Asp Pro Ile His Val Ala Gln Met Ala Lys Tyr Leu Asp  
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Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr Ala Ser Thr Ser  
100 105 110  
Asn Glu Pro Ser Pro Asp Leu Ala Asp Tyr Pro Met Asp Thr Val Pro  
115 120 125  
Asn Lys Val Glu His Leu Trp Phe Ala Gln Leu Phe His Asp Arg Lys  
130 135 140  
Gln Arg Glu Glu Arg Leu Thr Leu Ser Lys Glu Glu Arg Ala Lys Thr  
145 150 155 160  
Pro Tyr Ile Asp Phe Leu Arg Pro Ile Ile Ala Asp Ala Asp Thr Gly  
165 170 175  
His Gly Gly Ile Thr Ala Ile Ile Lys Leu Thr Lys Met Phe Ile Glu  
180 185 190  
Arg Gly Ala Ala Gly Ile His Ile Glu Asp Gln Ala Pro Gly Thr Lys  
195 200 205  
Lys Cys Gly His Met Ala Gly Lys Val Leu Val Pro Val Gln Glu His  
210 215 220  
Ile Asn Arg Leu Val Ala Ile Arg Ala Ser Ala Asp Ile Phe Gly Ser  
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      275      280      285
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      290      295      300
Lys Lys Ala Gly Leu Lys Leu Phe His Glu Ala Val Ile Asp Glu Ile
305      310      315      320
Lys Asn Gly Asn Tyr Ser Asn Lys Asp Ala Leu Ile Lys Lys Phe Thr
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Asp Lys Val Asn Pro Leu Ser His Thr Ser His Lys Glu Ala Lys Lys
      340      345      350
Leu Ala Lys Glu Leu Thr Gly Lys Asp Ile Tyr Phe Asn Trp Asp Val
      355      360      365
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      370      375      380
Ala Val Met Arg Gly Arg Ala Phe Ala Pro Tyr Ala Asp Leu Ile Trp
385      390      395      400
Met Glu Ser Ala Leu Pro Asp Tyr Ala Gln Ala Lys Glu Phe Ala Asp
      405      410      415
Gly Val Lys Ala Ala Val Pro Asp Gln Trp Leu Ala Tyr Asn Leu Ser
      420      425      430
Pro Ser Phe Asn Trp Asn Lys Ala Met Pro Ala Asp Glu Gln Glu Thr
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Tyr Ile Lys Arg Leu Gly Lys Leu Gly Tyr Val Trp Gln Phe Ile Thr
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Leu Ala Gly Leu His Thr Thr Ala Leu Ala Val Asp Asp Phe Ser Asn
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      485      490      495
Pro Glu Ile Glu Lys Gly Val Glu Val Lys His Gln Lys Trp Ser
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Gly Ala Thr Tyr Ile Asp Gly Leu Leu Lys Met Val Ser Gly Gly Val
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Glu Ser Lys Ala Lys Ala
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&lt;210&gt; 2

&lt;211&gt; 557

&lt;212&gt; PRT

&lt;213&gt; S. cerevisiae ICL1

&lt;400&gt; 2

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Ser Arg Trp Ser Lys Thr Lys Arg Asn Tyr Ser Ala Arg Asp Ile Ala
      35      40      45
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      50      55      60
Ala Arg Lys Leu Phe Lys Val Leu Glu Lys His His Asn Glu Gly Thr
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Val	Ser	Lys	Thr	Phe	Gly	Ala	Leu	Asp	Pro	Val	Gln	Ile	Ser	Gln	Met	
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Thr	Ala	Ser	Thr	Ser	Asn	Glu	Pro	Gly	Pro	Asp	Leu	Ala	Asp	Tyr	Pro	
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Glu	Glu	Leu	Asp	Glu	Met	Gly	Ala	Pro	Ile	Asp	Tyr	Leu	Thr	Pro	Ile	
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Val	Ala	Asp	Ala	Asp	Ala	Gly	His	Gly	Gly	Leu	Thr	Ala	Val	Phe	Lys	
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Cys	Ala	Asp	Ile	Met	His	Ser	Asp	Leu	Ile	Val	Val	Ala	Arg	Thr	Asp	
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Tyr	Arg	Gly	Gly	Thr	Gln	Cys	Ser	Ile	Met	Arg	Ala	Arg	Ala	Phe	Ala	
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Pro	Tyr	Ala	Asp	Leu	Val	Trp	Met	Glu	Ser	Asn	Tyr	Pro	Asp	Phe	Gln	
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Gln	Ala	Lys	Glu	Phe	Ala	Glu	Gly	Val	Lys	Glu	Lys	Phe	Pro	Asp	Gln	
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Trp	Leu	Ala	Tyr	Asn	Leu	Ser	Pro	Ser	Phe	Asn	Trp	Pro	Lys	Ala	Met	
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Ser	Val	Asp	Glu	Gln	His	Thr	Phe	Ile	Gln	Arg	Leu	Gly	Asp	Leu	Gly	
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Tyr	Ile	Trp	Gln	Phe	Ile	Thr	Leu	Ala	Gly	Leu	His	Thr	Asn	Ala	Leu	
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Ala	Val	His	Asn	Phe	Ser	Arg	Asp	Phe	Ala	Lys	Asp	Gly	Met	Lys	Ala	
				485					490					495		
Tyr	Ala	Gln	Asn	Val	Gln	Gln	Arg	Glu	Met	Asp	Asp	Gly	Val	Asp	Val	
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Leu	Lys	His	Gln	Lys	Trp	Ser	Gly	Ala	Glu	Tyr	Ile	Asp	Gly	Leu	Leu	
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Lys	Leu	Ala	Gln	Gly	Gly	Val	Ser	Ala	Thr	Ala	Ala	Met	Gly	Thr	Gly	
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<210> 3

<211> 550

<212> PRT

<213> C. tropicalis ICL

<400> 3

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Lys	Thr	Lys	Arg	Ile	Tyr	Ser	Ala	Glu	Asp	Ile	Ala	Lys	Lys	Arg	Gly
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His	Gly	Gly	Ile	Thr	Ala	Ile	Ile	Lys	Leu	Thr	Lys	Leu	Phe	Ile	Glu
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Asn	Leu	Leu	Ala	Val	Ala	Arg	Thr	Asp	Ser	Glu	Ala	Ala	Thr	Leu	Ile
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Thr	Ser	Thr	Ile	Asp	His	Arg	Asp	His	Tyr	Phe	Ile	Ile	Gly	Ala	Thr
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Asn	Pro	Glu	Ser	Gly	Asp	Leu	Ala	Ala	Leu	Met	Ala	Glu	Ala	Glu	Ala
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Lys	Ala	Gly	Asn	Tyr	Ser	Asn	Lys	Glu	Ala	Leu	Ile	Lys	Lys	Phe	Thr
			325						330					335	
Asp	Lys	Val	Asn	Pro	Leu	Ser	His	Thr	Ser	His	Lys	Glu	Ala	Lys	Lys
			340					345					350		
Leu	Ala	Lys	Glu	Leu	Thr	Gly	Lys	Asp	Ile	Tyr	Phe	Asn	Trp	Asp	Val
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Ala	Arg	Ala	Arg	Glu	Gly	Tyr	Tyr	Arg	Tyr	Gln	Gly	Gly	Thr	Gln	Cys
	370					375					380				

Ala Val Met Arg Gly Arg Ala Phe Ala Pro Tyr Ala Asp Leu Ile Trp  
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 Met Glu Ser Ala Leu Pro Asp Tyr Asn Gln Ala Lys Glu Phe Ala Asp  
 405 410 415  
 Gly Val Lys Ala Ala Val Pro Asp Gln Trp Leu Ala Tyr Asn Leu Ser  
 420 425 430  
 Pro Ser Phe Asn Trp Asn Lys Ala Met Pro Ala Asp Glu Gln Glu Thr  
 435 440 445  
 Tyr Ile Lys Arg Leu Gly Gln Leu Gly Tyr Val Trp Gln Phe Ile Thr  
 450 455 460  
 Leu Ala Gly Leu His Thr Thr Ala Leu Ala Val Asp Asp Phe Ala Asn  
 465 470 475 480  
 Gln Tyr Ser Gln Ile Gly Met Arg Ala Tyr Gly Gln Thr Val Gln Gln  
 485 490 495  
 Pro Glu Ile Glu Lys Gly Val Glu Val Lys His Gln Lys Trp Ser  
 500 505 510  
 Gly Ala Asn Tyr Ile Asp Gly Leu Leu Arg Met Val Ser Gly Gly Val  
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 35 40 45  
 Tyr Pro Ser Asn Val Gln Ala Lys Lys Leu Trp Gly Ile Leu Glu Arg  
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 Thr Met Val Thr Gln Met Ala Lys Tyr Leu Asp Thr Val Tyr Val Ser  
 85 90 95  
 Gly Trp Gln Ser Ser Ser Thr Ala Ser Ser Thr Asp Glu Pro Ser Pro  
 100 105 110  
 Asp Leu Ala Asp Tyr Pro Met Asn Thr Val Pro Asn Lys Val Asn His  
 115 120 125  
 Leu Trp Met Ala Gln Leu Phe His Asp Arg Lys Gln Arg Glu Glu Arg  
 130 135 140  
 Met Thr Thr Pro Lys Asp Gln Arg His Lys Val Thr Asn Val Asp Tyr  
 145 150 155 160  
 Leu Arg Pro Ile Ile Ala Asp Ala Asp Thr Gly His Gly Gly Leu Thr  
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 Ala Val Met Lys Leu Thr Lys Leu Phe Val Glu Arg Gly Ala Ala Gly  
 180 185 190  
 Ile His Ile Glu Asp Gln Ala Pro Gly Thr Lys Lys Cys Gly His Met  
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Ala Ile Arg Ala Gln Ala Asp Ile Met Gly Thr Asp Leu Leu Ala Ile  
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 Ala Arg Thr Asp Ser Glu Ala Ala Thr Leu Ile Thr Ser Thr Ile Asp  
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 His Arg Asp His Pro Phe Ile Ile Gly Ser Thr Asn Pro Asp Ile Gln  
 260 265 270  
 Pro Leu Asn Asp Leu Met Val Met Ala Glu Gln Ala Gly Lys Asn Gly  
 275 280 285  
 Ala Glu Leu Gln Ala Ile Glu Asp Glu Trp Leu Ala Lys Ala Gly Leu  
 290 295 300  
 Lys Leu Phe Asn Asp Ala Val Val Asp Ala Ile Asn Asn Ser Pro Leu  
 305 310 315 320  
 Pro Asn Lys Lys Ala Ala Ile Glu Lys Tyr Leu Thr Gln Ser Lys Gly  
 325 330 335  
 Lys Ser Asn Leu Glu Ala Arg Ala Ile Ala Lys Glu Ile Ala Gly Thr  
 340 345 350  
 Asp Ile Tyr Phe Asp Trp Glu Ala Pro Arg Thr Arg Glu Gly Tyr Tyr  
 355 360 365  
 Arg Tyr Gln Gly Gly Thr Gln Cys Ala Ile Asn Arg Ala Val Ala Tyr  
 370 375 380  
 Ala Pro Phe Ala Asp Leu Ile Trp Met Glu Ser Lys Leu Pro Asp Tyr  
 385 390 395 400  
 Lys Gln Ala Lys Glu Phe Ala Asp Gly Val His Ala Val Trp Pro Glu  
 405 410 415  
 Gln Lys Leu Ala Tyr Asn Leu Ser Pro Ser Phe Asn Trp Lys Lys Ala  
 420 425 430  
 Met Pro Arg Asp Glu Gln Glu Thr Tyr Ile Lys Arg Leu Gly Ala Leu  
 435 440 445  
 Gly Tyr Ala Trp Gln Phe Ile Thr Leu Ala Gly Leu His Thr Thr Ala  
 450 455 460  
 Leu Ile Ser Asp Thr Phe Ala Lys Ala Tyr Ala Lys Gln Gly Met Arg  
 465 470 475 480  
 Ala Tyr Gly Glu Leu Val Gln Glu Pro Glu Met Ala Asn Gly Val Asp  
 485 490 495  
 Val Val Thr His Gln Lys Trp Ser Gly Ala Asn Tyr Val Asp Asn Met  
 500 505 510  
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&lt;210&gt; 5

&lt;211&gt; 451

&lt;212&gt; PRT

&lt;213&gt; A. thaliana AceA

&lt;400&gt; 5

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 Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala Leu Arg Gly  
 35 40 45  
 His Leu Lys Gln Gly Tyr Ala Ser Asn Glu Met Ala Lys Lys Leu Trp  
 50 55 60  
 Arg Thr Leu Lys Ser His Gln Ala Asn Gly Thr Ala Ser Arg Thr Phe  
 65 70 75 80

Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys His Leu Asp  
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 Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His Asp Arg Lys  
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 Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg Thr Lys Thr  
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 Pro Phe Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly Asp Thr Gly  
                     165                    170                    175  
 Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu Phe Val Glu  
                     180                    185                    190  
 Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser Val Thr Lys  
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 Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Val Ser Glu His  
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 Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val Met Gly Thr  
 225                    230                    235                    240  
 Glu Thr Val Leu Val Ala Arg Thr Asp Ala Val Ala Ala Thr Leu Ile  
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 Asn Pro Ser Leu Arg Gly Lys Ser Leu Ser Ser Leu Leu Ala Glu Gly  
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 Met Thr Val Gly Lys Asn Gly Pro Ala Leu Gln Ser Ile Glu Asp Gln  
                     290                    295                    300  
 Trp Leu Gly Ser Ala Gly Leu Met Thr Phe Ser Glu Ala Val Val Gln  
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 Ala Ile Lys Arg Met Asn Leu Asn Glu Asn Glu Lys Asn Gln Arg Leu  
                     325                    330                    335  
 Ser Glu Trp Leu Thr His Ala Arg Tyr Glu Asn Cys Leu Ser Asn Glu  
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 Gln Gly Arg Val Leu Ala Ala Lys Leu Gly Val Thr Asp Leu Phe Trp  
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 Asp Trp Asp Leu Pro Arg Thr Arg Glu Gly Phe Tyr Arg Phe Gln Gly  
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 Ser Val Ala Ala Ala Val Val Arg Gly Trp Ala Phe Ala Gln Ile Ala  
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 Asp Ile Ile Trp Met Glu Thr Ala Ser Pro Asp Leu Asn Glu Cys Thr  
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 Gln Phe Ala Glu Gly Ile Lys Ser Lys Thr Pro Glu Val Met Leu Ala  
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&lt;210&gt; 6

&lt;211&gt; 434

&lt;212&gt; PRT

&lt;213&gt; E. coli aceA

&lt;400&gt; 6

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Gln Phe



Docket No.: 0399.2026-001  
Applicants: Michael C. Lorenz, *et al.*  
Title: Glyoxylate Cycle Enzymes as Targets  
For Antifungal Drug Development

Serial No.: 10/071,894  
Filed: February 8, 2002  
Date recorded: July 1, 2002  
File Format: ASCII  
Computer: IBM PC Compatible  
Operating System: Windows 2000

Docket No.: 0399.2026-001  
Applicants: Michael C. Lorenz, *et al.*  
Title: Glyoxylate Cycle Enzymes as Targets  
For Antifungal Drug Development

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